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REMARKS

By this amendment, claim 1 is revised to place this application in condition for allowance.

Currently, claims 1-7 are before the Examiner for consideration on their merits.

In the Action, the Examiner rejects all claims under 35 U.S.C. § 112, second paragraph, based on the contention that the claim language does not make it clear as the control of the flow rate of the gas. In response to this rejection, claim 1 is revised to state that the "gas flow rates of the supporting gas from the three or more groups are, respectively, controllable". It is submitted that this change to claim 1 renders the claim definite under the purview of 35 U.S.C. § 112, second paragraph. Thus, the rejection based on indefiniteness should be withdrawn.

Turning now to the prior art rejection, claim 1 has been revised to better define the invention and these revisions mean that the prior art cited by the Examiner cannot now establish a *prima facie* case of obviousness.

The features of claim 1 now include a higher density of nozzles at the outer periphery of the burner. In addition, the burner is now defined as being made of metal. Lastly, the discharge pipes are in a group of three or more.

Support for the amendments relating to the density of the nozzles can be found in the specification at page 10, lines 24-27 and page 11, lines 11 and 12. Here is it stated, "the inner pipes 42 are usually accommodated, as shown in Fig. 3A, in such a way as to be more dense from the center of the outer cylinder toward the outer periphery thereof". Another relevant statement is "Preferably, the inner pipes are located more densely from

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the center toward the outer side.”

Support for the amendment regarding the burner may be found at page 13, line 20.

Support for the number of groups is found at page 13, lines 19 and 20, wherein it is stated “it is preferred to provide three or four sections or groups of inner pipes as is shown in Fig. 3.”

The features of the invention added to claim 1 provide significant improvements, which are not found in the cited prior art. The use of a metal burner makes for easier fabrication than glass, thus leading to lower fabrication costs. The nozzle arrangement having density higher at the periphery of the burner enables one to arbitrarily control a flame intensity by controlling the shape and intensity of the flame. Moreover, since three or more groups of discharge pipes are used, the shape and intensity of a flame can be reliably controlled as desired.

The rejection of claims 1, 2, 3, 6, and 7 has been maintained under 35 U.S.C. § 102(b) based on United States Patent No. 6,386,001 to Shimizu.

It is submitted that Shimizu cannot anticipate claim 1 since the features are not found within the teachings of this prior art reference. Claim 1 now recites that the discharge pipes are classified into three or more groups, which allows for precise control of flame intensity. Shimizu uses only one group of discharge pipes and cannot be said to teach this limitation. Therefore, the Examiner can only rely on 35 U.S.C. § 103(a) to further rejection claim 1 in this regard.

It is also submitted that Shimizu does not teach a burner made of metal and lacking this teaching is another reason why the rejection under 35 U.S.C. § 102(b) cannot be maintained.

Moreover, Shimizu fails to teach the control aspect of claim 1, wherein the discharge pipes are classified into three or more groups and each group is controllable as is now defined in claim 1.

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The Examiner's reliance of Figure 45 of Shimizu to contend that plural groups of pipes are disclosed is noted. However, this alone does not meet the limitations of claim 1 since this claim also requires respective control of each group which is not found in Shimizu. Further, Applicants contest the contention that Shimizu teaches at least three groups of pipes. While it is true that Shimizu may suggest that the oxygen/nitrogen pipe locations within the region defined by the outer pipe 285 may vary radially, there is still no definition of different groups of pipes as has been postulated by the Examiner. Applicants submit that the Examiner has instilled his own definition of groups in Shimizu to support the rejection, when no such basis exists. The only basis for such a contention is the use of hindsight based on Applicants' invention and a rejection with such a contention is flawed and could not be sustained on appeal.

Even, *assuming arguendo*, that Shimizu is understood to teach plural groups of pipes, the gas flow for each group is not controlled as is required by claim 1. Therefore, the Examiner must still address this issue from a perspective of obviousness, not anticipation. While the Examiner could allege that this difference between the invention and Shimizu is an obvious one, the Examiner must have a reason to support such a conclusion. However, there is no reason other than using Applicants' specification as a teaching template to support such a rejection. Therefore, there is no legitimate basis under 35 U.S.C. § 103(a) to further reject claim 1.

Nabors does not supply the deficiencies in Shimizu. In the rejection, the Examiner cites Nabors to allege that it would be obvious to include at least three groups of discharge pipes in the burner of Shimizu. Applicants traverse this contention on the grounds that one of skill in the art

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would not be led to a modification of Shimizu when presented with the teachings of Nabors.

The first reason is that the burner employed by Nabors is entirely different from that used by Shimizu, and this disparity precludes a conclusion that Shimizu could be modified using the teachings of Nabors.

Nabors teaches a burner apparatus including a fuel exit port 12, an oxidizer primary top port 13, an oxidizer primary right side port 14, an oxidizer primary bottom port 15, an oxidizer primary left side port 16, an oxidizer secondary top port 17, an oxidizer secondary right side port 18, an oxidizer secondary bottom port 19, and an oxidizer secondary left side port 20. In this arrangement, the fuel exit port 12 is located substantially at the center of a burner block 7.

In contrast to Nabors, Shimizu passes the flammable gas through an outer pipe 285, and the oxygen and nitrogen pipes are disposed within the outer pipe 285. Shimizu and Nabors use entirely different arrangements for their respective burners. Nabors employs the various oxidant channels to control the shape and position of the flame, which is created via the emission of the combustible gas discharging from the central pipe of the burner, see col. 4, lines 10-15. Given that Nabors employs an entirely different burner design, why would one of skill in the art employ the multiple oxidant channels of Nabors in the burner of Shimizu, which does not have the flammable gas emitting from a center of the burner? The Examiner has drawn a conclusion of obviousness without the required reasoning. Put another way, the Examiner is merely selecting pieces of the prior art to formulate a rejection of the claims under 35 U.S.C. § 103(a), while ignoring other teachings of the prior art that would not lead one to the invention.

The same reasoning as outlined above also applies to any contention that Nabors

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somehow would lead one of skill in the art to provide controlled groups of discharge pipes among the inside pipes 286 of Shimizu. Since Shimizu's burner and Nabors are not in the least similar in design or operation, one of skill in the art would not be led to modify Shimizu and include at least three groups of discharge pipes as asserted in the rejection and also make them each controllable with respect to the gas flow rate. This again would be the impermissible use of hindsight to support the rejection.

Therefore, the existence of Nabors does not provide a basis to conclude that Shimizu could be modified to include the features of claim 1.

Gitman, while mentioned in the Action does not appear to be part of the rejection. Nevertheless, in the event that Gitman is somehow being used to support the rejection, Applicants also wish to demonstrate that this reference does not supply the deficiencies in Shimizu. Gitman teaches a method and an apparatus for high temperature heating, melting, refining and superheating of materials. The method of this reference includes separately supplying streams of fuel and at least two oxidizing gases. A first oxidizing gas reacts with the fuel, and a second oxidizing gas is directed about the flame core to further react with the fuel, while controlling the flow of the fuel, the oxidizing gases and cooling liquid to provided the required heat input, emissivity and combustion block temperature. As is apparent from Figure 1 of Gitman, the first and second oxidizing gas channels 7 and 13 are disposed at different levels and the second channel 13 is provided to further reaction of the fuel in a stepwise manner for the purpose of economization. The manner of combustion in this reference is completely different from that of the present invention wherein groups of discharge pipes are used to combust a fuel not in a

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stepwise manner. The manner of grouping of the channels also differs from that of the instant invention. If this type of burner nozzles is used in combination with the Shimizu's burner, the flame-controlled conditions of the invention would not be created because of the difference in the manner of combustion. Thus, it is submitted that claim 1, as amended, is not obvious over the Gitman reference in view of Shimizu.

To recap, Shimizu cannot be said to anticipate claim 1 since the respective control of the at least three groups of discharge pipes is lacking and there is no mention of a metal burner. The secondary references do not supply the deficiencies in Shimizu and they cannot be properly combined with Shimizu.

Applicants realize that this Amendment is being presented after a final rejection. However, the major thrust of the revision to claim 1 is the clarification of the respective control of the discharge pipe groups and this issue has already been before the Examiner and a new issue is not raised. Moreover, since this amendment clearly overcomes the rejection of record, it should be entered so that the application can be allowed or at least ripe appeal.

Accordingly, the Examiner is respectfully requested to examine this application in light of the arguments made above, and pass claims 1-7 onto issuance.

If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated June 13, 2007.

Again, reconsideration and allowance of this application is respectfully requested.

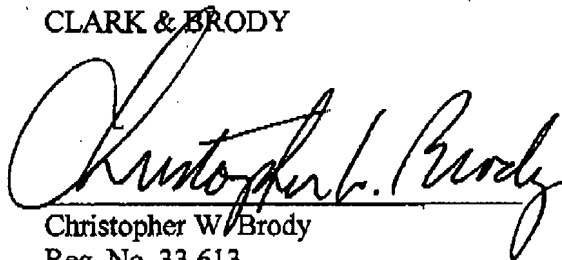
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Please charge any fee deficiency to Deposit Account No. 50-1088.

Respectfully submitted,

CLARK & BRODY

By

A handwritten signature in cursive script, appearing to read "Christopher W. Brody", is written over a horizontal line.

Christopher W. Brody
Reg. No. 33,613

Customer No. 22902
1090 Vermont Ave. NW Suite 250
Washington, DC 20005
Telephone: 202-835-1111
Facsimile: 202-835-1755
Docket No.: 12073-0004
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